

evaluate twice LV systolic function in long distance runners using echo, before and immediately after a relay race (each athlete ran around 60 km), in 2008 and in 2009, using the same protocol.

Methods.— among 150 runners engaged in the 600-km Paris-Courchevel race (teams of 12 runners taking over from one another during four days and three nights), 22 male runners in 2008 (mean age 47.8 ± 5.5 years) and 23 male runners in 2009 (mean age 49.4 ± 7.7 years) accepted on a voluntary basis to have an echocardiography the day before the race (pre) and immediately after the end of the race (post). The same physician performed all the examinations pre (PD) and post (MS) in 2008 and 2009. Analysis was performed off-line blinded to clinical data. The following echo parameters were measured: LV fractional shortening (FS), LVEF using biplane Simpson method and end systolic stress (ESS). We also calculated a predicted FS according to ESS, and a ratio of observed/predicted FS (o/p ratio).

Results.— In 2008, pre LVEF ($69.2 \pm 4.9\%$) and pre FS ($48.5 \pm 4\%$) were significantly higher than post LVEF ($65.3 \pm 4.4\%$, $P=0.007$) and post FS ($42.6 \pm 6.0\%$, $P=0.0005$), but not in 2009 (pre LVEF $66.7 \pm 5.3\%$ and post LVEF 67.6 ± 5.4 , $P=0.5$) (pre FS $37.7 \pm 4.6\%$ and post FS $36.9 \pm 5.5\%$, $P=0.3$). However, end systolic stress (ESS), an afterload index, was not modified after the 2008 race (pre ESS 40.7 ± 6.2 103 dynes/cm², post ESS 43.9 ± 11.0 103 dynes/cm², $P=0.22$), but it was in 2009 (pre ESS 52.0 ± 14.3 103 dynes/cm², post ESS 47.6 ± 11.9 103 dynes/cm², $P=0.03$). O/p ratio was significantly lower after the race, both in 2008 (pre o/p $117.0 \pm 8.4\%$; post o/p $104.1 \pm 11.0\%$, $P<0.0001$) and 2009 (pre o/p $98.2 \pm 8.7\%$; post o/p $93.1 \pm 11.5\%$, $P=0.03$).

To conclude.— In the present study, LVEF decreased in runners after the race in 2008, but not in 2009. This could lead to an opposite conclusion concerning LV systolic function in long distance running. However, using adapted indices, sensitive to contractility and load, we found a comparable result with a significant and slight reduction of LV systolic function both in 2008 and 2009 immediately after a long distance running.

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Analysis of right ventricular global strain by 2d speckle imaging in patients with myocardial infarction

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Right ventricular (RV) myocardial strain (ϵ) is a new useful tool to evaluate RV function. The aim of our study was to use 2D speckle

parameters in patients with first-time acute myocardial infarction (AMI).

Methods.— We analysed 30 patients admitted with AMI (58 ± 14 years, 21 inferior wall AMI and nine anterior) treated with primary percutaneous coronary intervention. We compared them to 24 healthy patients (53 ± 11 years, ns for age). Complete echocardiography was performed between two and four days after admission. To assess RV function, we analysed the three walls of the RV: septal and lateral from 4C view and inferior from RV2C view.

We measured maximal systolic ϵ (%) in the basal, median and apical segments of these three walls by 2DSI. We calculated lateral, inferior and septal ϵ as the means of three segments of respectively lateral, inferior and septal walls and global RV ϵ as the mean of these nine values. All strain values were averaged on three consecutive cycles. We also measured TAPSE, RV MPI (Tei index) and maximal velocity of systolic wave (S max) on the lateral tricuspid annulus using Doppler tissue imaging. For statistical analysis, we calculated Spearman's correlations coefficients between RV ϵ values and other echographic parameters. Student *t*-test and Mann & Whitney test were used for group comparisons as appropriate.

Results.— All ϵ values correlated significantly with TAPSE, Tei index and S max (respectively, global RV ϵ : $r = -0.712$ $P < 0.001$; $r = 0.381$ $P < 0.001$; $r = -0.555$ $P < 0.001$). All ϵ values and TAPSE, but not Tei index or S max, were significantly higher in normal patients than in patients with AMI. Alteration of RV global ϵ in patients with anterior AMI was mainly due to a significant decrease in septal ϵ . RV global ϵ was more severely altered in patients with inferior than with anterior AMI, because of an additional decrease in inferior and lateral ϵ (see Table).

Conclusion.— 2DSI allows the calculation of RV global strain which is well correlated to standard echocardiographic parameters of RV function. Furthermore, study of regional and global RV ϵ adds interesting information in the evaluation of RV dysfunction in patients with AMI. A decrease of global RV ϵ was noted in all types of AMI and was mainly due to a decrease of septal ϵ in anterior AMI. In patients with inferior AMI, an additional decrease in RV inferior and lateral ϵ explained the lower values of RV global ϵ as compared to anterior AMI. Larger studies will be necessary to compare RV strain values in patients with inferior AMI extended or not to the RV.

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